Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife
Route 135, Westborough, MA 01581
telephone: 508-389-6360; fax: 508-389-7891
www.nhesp.org

COMMON TERN (*Sterna hirundo*)

State Status: **Special Concern**
Federal Status: None

B. Byrne, MDFW

The Common Tern is a small seabird that returns in the spring from warmer locales to enliven Massachusetts beaches with its raucous cries. It is a gregarious and charismatic creature, joining its neighbors to boldly mob, peck, and defecate on intruders to drive them away from their nests, which are situated on the ground. Probably numbering in the hundreds of thousands in the state before 1870, the Common Tern is considerably more scarce today. Protection, management, and restoration of nesting colonies have allowed populations to gradually increase, but the Common Tern remains a Species of Special Concern in Massachusetts.

Description. The Common Tern measures 31-35 cm in length and weighs 110-145 g. Breeding adults have light gray upperparts, paler gray underparts, a white rump, a black cap, orange legs and feet, and a black-tipped orange bill. The tail is deeply forked and mostly white, and does not extend past the tips of the folded wings. In non-breeding adults, the forehead, lores, and underparts become white, the bill becomes mostly or entirely black, legs turn a dark reddish-black, and a dark bar becomes evident on lesser wing coverts. Downy hatchlings are dark-spotted buff above and white below with a mostly pink bill and legs. Juveniles are variable: they have a pale forehead, dark brown crown and ear coverts, buff-tipped feathers on grayish upperparts resulting in a scaly appearance, white underparts, pinkish or orangish legs, and a dark bill. The voice has a sharp, "irritable" timber, and includes a *keeuri* advertising call and *kee-arrrr* alarm call.

Similar Species in Massachusetts. The Arctic Tern (*Sterna paradisaea*) is similar in size, but has a shorter, blood-red bill, very short red legs, much grayer underparts with contrasting white cheeks, a longer tail that extends past the tips of the folded wings, and a higher-pitched voice (although some calls are similar). The Roseate Tern (*Sterna dougallii*) is also similar in size, but has a mostly or entirely black bill during the breeding season, much paler gray upperparts, white or very pale pink underparts, a very long tail (longer than that of the Arctic Tern), and a distinctively different voice. The Least Tern (*Sterna antillarum*) is markedly smaller, with a yellow-orange bill, a white forehead, and a proportionately much shorter tail.

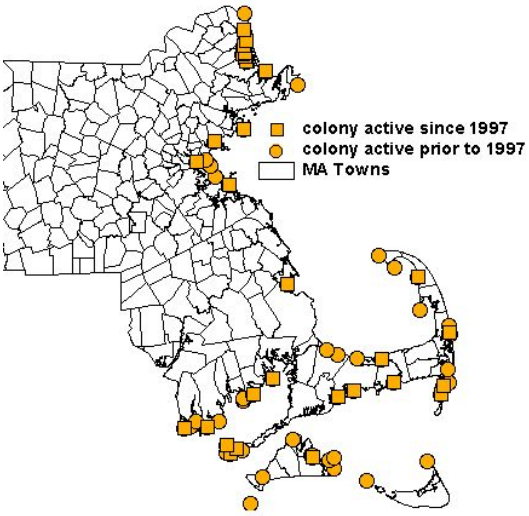

Figure 1. Distribution of present and historic Common Tern nesting colonies in Massachusetts.

Distribution and Migration. Outside the breeding season, the Common Tern is widely distributed primarily at temperate latitudes. It breeds in the northern hemisphere, principally in the temperate

zones of Europe, Asia, and North America, and at scattered tropical and sub-tropical locations. In North America, it breeds along the Atlantic Coast from Labrador to South Carolina, and along lakes and rivers as far west as Montana and Alberta. Massachusetts birds arrive in April and May to nest at coastal locations statewide (Fig. 1). The largest populations occur on Cape Cod and in Buzzards Bay (see Status, below). Massachusetts birds depart from breeding colonies in July and August, and concentrate in "staging areas" around Cape Cod to feed before beginning their migratory journeys southward. Birds breeding on the Atlantic coast generally winter on the north and east coasts of South America as far south as northern Argentina.

Breeding and Foraging Habitat. In Massachusetts, the Common Tern generally nests on sandy or gravelly islands and barrier beaches, but also occurs on rocky or cobbly beaches and salt marshes. It prefers areas with scattered vegetation, which is used for cover by chicks. Along the Atlantic coast in the breeding area, it usually feeds within 1 km of shore, often in bays, tidal inlets, or between islands; it may forage as far as 20 km from the breeding colony.

Food Habits. The Common Tern feeds mainly on a wide variety of small fish; frequently it includes crustaceans and insects in its diet. The primary prey item in most Atlantic coast breeding colonies is the American sand lance. In Massachusetts, silversides, cunner, herring, pipefish, and hake are also important. Over water, it captures food by plunge-diving (diving from heights of 1-6 m and submerging to ≤ 50 cm), diving-to-surface, and contact-dipping; it catches flying insects on the wing. It often forages singly or in small groups, but it may congregate in feeding flocks of ≥ 1000 birds, especially over schools of predatory fish that drive smaller prey to the surface. It commonly feeds in association with Roseate and Arctic Terns, and sometimes gulls.

Breeding.

Phenology. Birds begin arriving in late-April or early-May. They select breeding sites and begin courting. Egg dates are 4 May – 15 August. Incubation lasts about 3 wk, and the nestling period about 3-4 wk. Most birds have departed for winter quarters by mid-October.

Colony. The Common Tern is gregarious, nesting in colonies of a few to thousands of pairs. It often breeds in colonies with Roseate and Arctic Terns, Black Skimmers (*Rynchops niger*) and, rarely, with the Least Tern. Pairs vigorously defend their nesting territory and sometimes also maintain a linear near-shore feeding territory. (See also Predation, below).

Pair bond and parental care. Courtship involves both aerial and ground displays, including High Flights (in which a pair spirals to 30-100 m above ground and then glides down), Low Flights (in which a fish-carrying male is chased by a female), Parading (circling on ground), and Scraping. Males feed females during courtship and early incubation. The Common Tern is socially monogamous, but sometimes seeks extra-pair copulations. While both parents incubate eggs and attend chicks, females do more incubating and brooding (especially at night), and males generally do more feeding. Birds of similar age tend to pair. Mate fidelity is high; data from Germany showed that two-thirds of pair bonds were retained from year-to-year; the rest were broken by death or divorce in approximately equal frequencies. Pair-bond durations of up to 14 years have been documented.

Nests. Nests are depressions or "scrapes" in the substrate, to which nesting material, usually dead vegetation or tide wrack, is added throughout incubation. Nest density is highly variable, but usually in the range of 0.06-0.5 nests/m^2.

Eggs. Eggs are cream, buff, or medium brown (sometimes greenish or olivish) with dark spots or streaks. Markings are often evenly distributed on the egg, but may be concentrated at the blunt end -- especially for the third egg of the clutch, which also may be paler than the first two. Eggs measure approximately 40 x 30 mm, and are subelliptical in shape. Clutch size is usually 2-3 eggs, occasionally 1 or 4. Incubation is sporadic until the clutch is complete. The period between laying and hatching is about 23 d for the first egg and about 22 d for the second and third eggs. Incubation shifts last anywhere from <1 min. to several hours.

Young. Chicks are semi-precocial. At hatching, they are downy and eyes are open. They are able to stand and take food within hours after hatching. They wander away from the nest to seek cover, but still remain in the territory, at 2-3 d. Chicks are brooded/attended most of the day and night for the first few days of life. Parental attendance drops off after that, except for cold, wet, or hot weather. Parents carry prey to chicks in their bills. Feeding rates vary by location, but are usually on the order of 1-2 feedings per chick per hour. Chicks fledge at 22 to > 29 d, but they remain at first within the colony and are still dependent on parents for food. After about a week, they venture out with parents to the feeding grounds, but are unable to catch fish for themselves until 3-4 wk post-fledging. Families leave the colony 10-20 d after chicks fledge and remain together during the staging period. Little is known of family cohesion during migration.

Predation.

Predators. In North America, predators of Common Tern eggs, young, and adults include a wide variety of birds and mammals, snakes, ants, and land crabs. Nocturnal mammals (especially fox, mink, and rat; sometimes skunk, raccoon, feral cat, weasel, and coyote) are the most important predators in mainland or near-shore colonies. Mammalian predation often causes birds to abandon the site. A local example of this is Plymouth Beach: in 1999, a family of foxes hunting on the beach displaced a thriving colony of about 5,000 pairs of mostly Common Terns. At islands further from the mainland, Great Horned Owl and Black-crowned Night-Heron are important predators. Herring and Great Black-backed Gulls, Short-eared Owl, American Crow, Ruddy Turnstone, Great Blue Heron, and Peregrine Falcon can also be significant predators.

Responses to predators and intruders. The Common Tern prefers to nest on islands lacking predatory mammals or reptiles. Eggs and chicks are cryptically colored. Hatched eggshells are removed from the nest site and feces are dispersed (the white of the feces and of the inner shell is obvious).

Behavioral response to diurnal predators is very variable, and depends on predator species and behavior, stage in nesting cycle, and degree of habituation to threat. Hunting Peregrine Falcons cause "panics", during which terns rapidly flee the nesting area and fly over the water; Peregrines may delay colony occupation. Many other diurnal predators (including crows, Herring and Great Black-backed Gulls, Northern Harriers, and Bald Eagles) are "mobbed" (chased and attacked) by terns. Common Terns distinguish between hunting and non-hunting gulls and falcons, and respond to them differently. Common Terns attack human intruders by diving at them, pecking exposed body parts, and defecating on them. Inexperienced birds may merely circle overhead and give alarm calls, whereas more experienced birds may launch intense attacks -- to which many researchers will attest. Common Terns also distinguish between individual humans, and familiar humans are attacked more vigorously. Attacks intensify as chicks begin to hatch, but diminish as chicks mature and become less vulnerable. Adults' alarm calls cause very young chicks (≤3 d) to crouch motionless, while older, more mobile chicks seek cover.

There is little information on how the Common Tern responds to nocturnal mammalian predators; however, nocturnal predation by owls and night-herons causes terns to abandon the colony at night. This has several consequences: prolonged incubation periods for eggs; chick deaths due to exposure; increased predation on eggs and chicks, particularly by night-herons and ants; and sometimes inattentiveness to eggs by day, which increases egg vulnerability to diurnal predators.

Life History Parameters. In Massachusetts, most Common Terns breed annually starting at 3 yr, some at 2 or 4 yr. As birds age, they nest progressively earlier in the season. Only one brood per season is raised, but birds renest 8-12 d after losing eggs or chicks. Productivity is highly variable, and may range from zero to > 2.5 chicks fledged per pair, depending on food availability, degree of flooding, and predation. Productivity increases with age through the lifetime of the bird. Survival from fledging to 4 yr was estimated at about 10% for Massachusetts birds. Annual survival of adults in Massachusetts was estimated about 90%. The oldest documented Common Terns are two individuals that bred at age 26 yr.

Status. The Common Tern is listed as a Species of Special Concern in Massachusetts. Populations are well below levels reported pre-1870, when hundreds of thousands are reported to have bred. Egging probably limited populations throughout the 1700s and 1800s. More seriously, hundreds of thousands were killed along the Atlantic coast by plume-hunters in the 1870s and 1880s, reducing the population to a few thousand at fewer than ten known sites by the 1890s. In Massachusetts, only 5,000 to 10,000 pairs survived, almost exclusively at Penikese and Muskeget Is. The state's population grew to 30,000 pairs by 1920, following protection of the birds in the early part of the century. Populations subsequently declined through the 1970s, reaching a low of perhaps 7,000 pairs, largely as a result of displacement of terns from nesting colonies by Herring Gulls and, later, by Great Black-backed Gulls. Since then, numbers have edged upwards (Figure 2). In 2005, 15,447 pairs nested at 34 sites in the state. About 90% of these birds were concentrated at just three sites: Monomoy National Wildlife Refuge (S. Monomoy and Minimoy Is)., Chatham (9,747 pairs); Bird I., Marion (1,857 pairs); and Ram I., Mattapoisett (2,278 pairs). While populations in the state are relatively well-protected during the breeding season, trapping of birds for food on the wintering grounds may be a source of mortality for Common Terns.

Conservation and Management. Populations in Massachusetts continue to be threatened by predators and displacement by gulls. Also, should established nesting colonies be disrupted, lack of suitable (*i.e.*, predator-free) alternative nesting sites is a serious

concern in the state. Most colonies are protected by posting of signs, by presence of wardens, and/or by exclusion of visitors. Lethal gull control (initially), continual gull harassment, and predator control at S. Monomoy and Ram Is. have resulted in thriving tern colonies at these restored sites (see Status, above). Two other tern restoration projects are currently underway, both involving clearing gulls from small portions of islands. At Penikese I., in Buzzards Bay, after a pilot project in 1995, aggressive discouragement of gulls (using harassment by trained dogs and human site occupation) was initiated in 1998. The colony increased from 137 pairs of Common Terns in 1998 to 756 pairs in 2006. Non-lethal gull control at Muskeget I., in Nantucket Sound, began in 2000; however, the budding tern colony is struggling against predators. Tern restoration is a long-term commitment that requires annual monitoring and management to track progress, identify threats, manage vegetation, prevent gulls from encroaching on colonies, and remove predators.

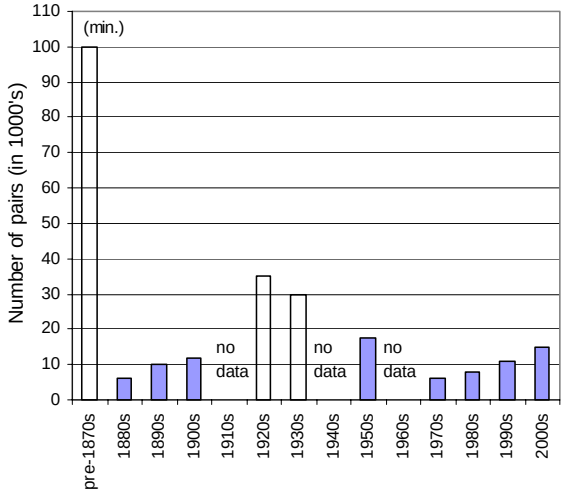

Figure 2. Common Tern population trends in Massachusetts, pre-1870s to 2005 (modified from Blodget and Melvin 1996).

References.

Blodget, B. G. and S. M. Melvin. 1996. Massachusetts tern and piping plover handbook: a manual for stewards. Mass. Div. of Fisheries and Wildlife. Natural Heritage and Endangered Species Program. Westborough, MA.

Nisbet, I. C. T. (2002). Common Tern (*Sterna hirundo*). *In* The Birds of North America, No. 618 (A. Poole and F. Gill, eds.). Birds of North America, Inc., Philadelphia, PA.

Veit, R. R. and W. R. Petersen. 1993. Birds of Massachusetts. Massachusetts Audubon Society. Lincoln, MA.

C. S. Mostello, 2007

Partially funded by the New Bedford Harbor Trustee Council